Training Calendar with Course Description for the
Period September, 2009 till March, 2010

Ministry of Power and USAID
Distribution Reforms, Upgrade & Management (DRUM) training programs
Administered Through Power Finance Corporation Ltd.
recognized by Core International and PFC, India.
Conducted by **Yadav Measurements Pvt. Ltd.**

Power Finance Corporation Ltd.
(A Govt. of India Undertaking)

Reflecting the Truth

Electricity Metering is facing challenges due to rapid technical innovations, proliferation in numbers and type of applications such as consumer billing with revenue protection, tariff structuring, load planning, demand management, reduction in T&D losses etc. State-of-the-art metering combined with computer application, information and communication technology is now providing solutions to the various problems being faced by electricity utilities.

It is imperative for utility engineers to understand the new static meters, standards applicable, testing, its application and metering system approach to derive best benefits out of these and compliance to various regulations issued by central & state regulators.

Yadav Measurement's team with a vast experience in the field of metering, electrical measurements, calibration and training of power sector professionals has been conducting courses under "Electricity Metering School" which are recognised and approved by Power Finance Corporation Ltd., Delhi under Ministry of Power (MoP), India and U.S. Agency for International Development (USAID) "Distribution Reforms, Upgrade and Management (DRUM) training programs".

Who should attend?

The curriculum is specially designed for utility engineers and managers involved in the area of revenue protection, billing (from vigilance and O&M), enforcement, purchasing, meter testing, metering system designers so as to make them aware of basics of various issues involved in this sector.

Training 1

Training Program on Electricity Metering Technologies and Systems

Course Description:

The objective of this training is to familiarise and make the participants, understand the static metering technology, metering systems and application. A lots of hands on practical training and visit to calibration and test Laboratory will help learn effectively.

Objectives:

Provides in-depth understanding and learning of:

1. Principles of electrical energy flow, measurement of power and energy in single and three phase circuits.
2. Static meter design and working, software features and implementation.
3. Various Indian and International standards applicable on calibration and testing of energy meters & test systems.
4. Tamper and fraud issues, detection of tampers and recording of tamperdata in meters.
5. Good installation practices for safe and reliable operation of meters.
6. Importance of Instrument transformers, issues of application and testing

Training 2

Training Program on Electricity Metering Technologies..... Advanced Applications and Systems *Course*

Description:

The objective of this training is to familiarise and make the participants, understand the advanced static metering technologies, metering systems and application.

Objective:

Provides in-depth understanding and leaning of:

1. Power system harmonics, analysis and effect of harmonics on Energy measurement.
2. The up-coming requirements of Power quality and energy meter specifications.
3. Specialized metering applications for industrial consumers such as summation metering, Traction load metering
4. Specialized metering applications for generation and distribution companies such as Tie line metering, Distribution transformer metering, grid metering etc.
5. Software systems for meter reading to billing, engineering applications, planning, load forecasting, DSM etc. & Introduction to ABT.
6. In circuit meter reliability assessment.
7. Automated meter reading, communication technology familiarization, choices and applications.
8. Prepayment metering technology choices, requirements of vending and applications.

Training 3

Electricity Revenue Protection *Course Description:*

Most of the electricity utilities in India today, are facing difficult financial situation. The major contributor to the situation are high T&D losses and tampers in metering systems. The workshop on Electricity Revenue protection is planned to provide in-depth understanding of various issues related to Revenue protection, provisions in the Electricity Act 03, legal aspects and case studies for utilities empowering them to enforce RP measures.

Objectives:

Provides in-depth understanding and leaning of:

1. Basics of power and energy measurements, vector analysis-analyzing system and tamper conditions.
2. Static meter design and working, software features and implementation,
3. Tamper and fraud issues, frauds by tampering meter connections or other various techniques. Issues related to system conditions and tamperdetection.
4. Tamper detection and tamper recording in meters and to use this information for billing assessment.
5. Indian Electricity Act 03 and provisions related to theft of energy, assessment and enforcement.

6. Case studies of tampers detection and revenue protection in some of the utilities., how they have gone about turning around the situation and sharing their experiences.
7. Legal aspects and presentation of cases to special courts.

Training 4

Laboratory Accreditation (NABL) of Meter Testing Lab in Utilities

Course Description:

The objective of the training on "NABL accreditation of energy meter and Instrument Transformer Testing Laboratories" is to familiarise and make the participants, (generally Engineers associated with Electricity meter and metering IT testing) understand the requirements of NABL accreditation, procedure for application for NABL accreditation, development and improvement of quality system in meter testing laboratories. This also covers technical requirements of energy meter and instrument transformer standards and testing methods. A lot of hands on practical training and visit to calibration and test Laboratory will help learn effectively.

Objectives:

Provides in-depth understanding and learning of.

1. Advantages of NABL accreditation
2. Procedure for getting accreditation
3. Requirements of NABL accreditation
4. Requirements of calibration and test instruments in meter test laboratory.
5. Requirements of quality system (as per IS/ISO/IEC 17025:2005) in laboratory
6. Requirements of Indian and IEC standards on energy meters
7. Requirements of Indian and IEC standards on metering instrument transformers
8. Good laboratory practices and maintaining proper traceability of measurement
9. Preparation of quality system documents and its implementation
10. Concept of measurement uncertainty and estimation methods for energy meter and instrument transformer test laboratory.
11. Inter laboratory comparison and proficiency testing program.

Experienced Faculties:

Faculties for the course are experts in metering system with more than 10 years of experience in the area of electronic meters design and application.

Regular faculties to name some:

- Mr. N.K. Bhati , Mr. B. M. Vyas , Mr. Kiran , Mr. Abhijat Dube, Mr. Umesh Soni (YMPL)
- Mr. G.K. Panchal , Mr. S.Patnaik , Mr. Mehdidi (Datagen Power Services Pvt. Ltd.)
- Mr. Surendra Jhalora,Mr. Shafik Ahmed, Prachitee, Mr. Sumeet Chowdhary.(Secure Meters Ltd.)
- Mr. Rajesh Nimare (PRI Ltd.,UK)
- **Guest Faculties in Past:**

  Experts from utilities and legal experts are invited to Share their experience.
- Mr. Rajat Majumdar (IPS, Ex-Advisor of Security & Vigilance-WBSEB)
- Mr. Piyush Goyal (Head-group of Corporate Commercial and Regulatory Affairs in NDPL)
- Mr. P. S. Shukla (Retd. Session Judge in Rajasthan)
- Mr. Mandlika Seshagiri Rao (Director Technical in M/s Masters Hitech Systems)
- Dr. Ravindra B. Mishra (Professor-IIT, Kharagpur)
- Mr. Rathin Ghosh (S.E., WBSEB)

Training Calendar (September, 2009 – March, 2010)

S.No	Name of the Training Module	Start Date	Completion Date
1.	Metering School Electricity metering technologies and systems	8 Sep. 09	12 Sep. 09
2.	Metering School Electricity metering technologies. Advanced applications and systems.	14 Sep. 09	18 Sep. 09
3.	Laboratory Accreditation (NABL) of meter testing lab in utilities.	5 October 09	9 October 09
4.	Metering School Electricity metering technologies and systems	1 Dec 09	5 Dec 09
5.	Metering School Electricity metering technologies. Advanced applications and systems.	7 Dec 09	11 Dec 09
6.	Workshop on Electricity Revenue Protection.	18 Jan 10	22 Jan 10
7.	Metering School Electricity metering technologies and systems	9 March 10	13 March10
8.	Metering School Electricity metering technologies. Advanced applications and systems	15 March 10	19 March 10

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